

REMARKS

Applicant thanks the Examiner for the thorough examination of the application. The specification has been amended to add a subject heading and to correct a minor error. No new matter is believed to be added to the application by this Amendment.

Status Of The Claims

Claims 1-17 are pending in the application. The claims have been amended to improve their language and antecedent basis. The amendments to claim 1 find support at page 8, lines 3-6 of the specification. The amendments to claim 2 find support at page 9, lines 16-18 of the specification. Claim 17 finds support in claim 1 and in the specification at page 5, lines 7-8 and at page 16, lines 13-14.

Objection To The Specification

The Examiner objects to page 30, lines 13-18 as having an informality in the passage ". . . ions and contains the fff or the calcium carbonate treated . . ." This passage has been amended to read: ". . . ions and contains the weak electroconductive carbon black or the calcium carbonate treated . . ." This amended phrase corresponds to claim 2 and the paragraph starting at page 8, line 15 of the specification.

Rejections Based On Hashimoto '807 and Matsunaga '038

In the Office Action, the Examiner sets forth the following rejections:

I. Claims 1 and 2 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto '807 (USP 6,648,807) in view of Matsunaga '038 (USP 6,653,038).

II. Claims 3, 4 and 13-16 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto '807 in view of Matsunaga '038 and Yamazaki '692 (USP 6,480,692).

III. Claims 5, 6, 9 and 10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto '807 in view of Matsunaga '038 and Hong '069 (U.S. 2004/0010069 A1).

IV. Claims 7, 8, 11 and 12 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto '807 in view of Matsunaga '038, Yamazaki '692 and Hong '069.

Applicant respectfully traverses all of the aforesaid rejections.

The Present Invention And Its Advantages

The present invention relates to the electroconductive rubber roller that is used preferably as a development roller provided in an image-forming mechanism of a laser printer and the like to make toner adhere to a photosensitive member. The development roller is superior in its toner-transporting performance and in charging the toner.

One of the many novel features of the present invention lies in an outer rubber layer containing an ionic-conductive rubber. In this rubber, electroconductive carbon

black and/or fatty acid-treated calcium carbonate are used a dielectric loss tangent-adjusting filler. The result is the following electric resistance relationship: $\log R_{100} - \log R_{500} < 0.5$.

The present invention has many embodiments, and a typical embodiment can be found in claim 1:

1. An electroconductive rubber roller having an outermost rubber layer made of a rubber composition containing an ionic-conductive rubber as a main component thereof,

wherein a the surface of said outermost rubber layer comprises an oxide film formed by oxidation of the outermost rubber layer by irradiating with ultraviolet rays and/or ozone; and said rubber composition contains a dielectric loss tangent-adjusting filler to set a dielectric loss tangent of said electroconductive rubber roller to 0.1 to 1.5.

Distinctions Of The Invention Over The Cited Art

Hashimoto '807 discloses a conductive rubber roller which includes (a) an epichlorohydrin rubber containing 40 mol% or more of ethylene oxide, and (b) an acrylonitrile butadiene rubber component having an acrylonitrile content of 20% by weight or less, as noted at column 2, lines 36-51. Hashimoto '807 discloses at column 2, lines 10-13 that carbon black may be added as a method of regulating electrical resistance, but: "The addition of carbon black ... is not preferable because it tends to cause a variation in electrical resistance."

That is, Hashimoto '807 teaches away from the present invention, which can use carbon black in the outer rubber layer. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303

(Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983).

Matsunaga '038 discloses a toner and image forming method and process cartridge in which toner **10** is triboelectrically charged with the use of a developing sleeve **14** and a magnet **11** as shown in Figure 1. The developing sleeve **14** may include a substrate **6** coated with a resinous coating layer **1** that constitutes a binder resin **4** and optionally an electroconductive substance **2**, a filler **3**, and a solid lubricant **5**, as shown in Figure 3.

Both Hashimoto '807 and Matsunaga '038 fail to disclose or suggest an electroconductive rubber roller having an outermost rubber layer surface which constitutes an oxide film as in the roller of the present invention.

That is, Matsunaga '038 discloses a development roller using a two-component magnetic developer. In contrast, the development roller of the present invention uses a single-component roller (see claim 17). In the case of the development roller that uses a two-component magnetic developer (magnetic powder and toner), the functions of charging and transporting toner are controlled by the magnetic powder and a magnet in the development roller. Therefore, the technology of Matsunaga '038 does not require the "dielectric loss tangent" of the present invention to enhance these functions.

Further, Matsunaga '038 discloses that the development sleeve is composed of a binder resin **1**, not a rubber. The layer of resin is thin as shown in Figure 3. Matsunaga

'038 therefore clearly fails to disclose or suggest a rubber layer have a thickness of 0.5 mm to 10 mm, as is set forth in claim 17 of the present invention.

Therefore, one having ordinary skill in the art would not be motivated by Hashimoto '807 and Matsunaga '038 to produce claim 1 of the present invention. A *prima facie* case of obviousness has not been made. Claims depending upon claim 1 are patentable for at least the above reasons.

In the Office Action the Examiner turns to Yamazaki '692 for teachings pertaining electric resistance. The Examiner then turns to Hong '069 for teachings pertaining to rubber composition. However, these teachings of Hong '069 and Yamazaki '692 fail to address the deficiencies of Hashimoto '807 and Matsunaga '038. A *prima facie* case of obviousness has thus not been made over any combination of Hong '069, Yamazaki '692, Hashimoto '807 and Matsunaga '038.

These rejections are overcome and withdrawal thereof is respectfully requested.

Information Disclosure Statement

The Examiner is thanked for considering the Information Disclosure Statement filed November 20, 2003 and for making the initialed PTO-1449 form of record in the application, in the Office Action mailed May 31, 2005.

Prior Art

The prior art cited but not utilized by the Examiner indicates the status of the conventional art that the invention supercedes. Additional remarks are accordingly not necessary.

Applicant respectfully notes that Yamazaki '692 has been utilized in the Office Action. However, this reference has not been made of record in the PTO-892 form attached to the Office Action.

The Examiner is accordingly respectfully requested to make Yamazaki '692 of official record in the next official action.

The Drawings

The Examiner has indicated that the drawing figures are acceptable in the Office Action mailed May 31, 2005.

Foreign Priority

The Examiner has acknowledged foreign priority and has indicated that the certified copy of the priority document has been received in the Office Action mailed May 31, 2005.

Conclusion

The Examiner's rejections have been overcome, obviated, or rendered moot. No issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D.

Application No. 10/716,608
Amendment dated October 31, 2005
Reply to Office Action of August 31, 2005

Docket No.: 2927-0158P

(Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a two (2) month extension of time for filing a reply in connection with the present application, and the required fee of \$450.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

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Respectfully submitted,

By _____

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